COUNTY FOREST COMPREHENSIVE LAND USE PLAN

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Rev. 05/21/19

CHAPTER 800

INTEGRATED RESOURCE MANAGEMENT

800 CHAPTER OBJECTIVES

1. To introduce and communicate to the public, the County Board of Supervisors, and to the Wisconsin DNR, the integrated resource approach that forestry, wildlife and other natural resource staff will use on the Vilas County Forest during this planning period.
2. Counties may wish to consider "Integrated Resource Management Units" (IRMU) approach, that will identify and summarize the natural resources, social and physical management potential and opportunities for each unit. *(These units are identified and are to be updated in the Appendix Chapter 3000.) If your forest has specific management goals for a block that are different than the rest of the forest, they should be identified within this chapter. (Examples: designated motorized areas, silent sport areas, ruffed grouse areas, etc…)*

805 INTEGRATED RESOURCE MANAGEMENT APPROACH

Integrated Resource Management is defined as: "the simultaneous consideration of ecological, physical, economic, and social aspects of lands, waters and resources in developing and implementing multiple-use, sustained yield management" (Helms, 1998).

This balance of ecological, economic, and social factors is the framework within which the Vilas County Forest is managed.

The working definition of Integrated Resource Management means, in large part, keeping natural communities of plants and animals and their environments healthy and productive so people can enjoy and benefit from them now and in the future.

The remainder of this chapter is written to help communicate how the Forest is managed on an integrated resource approach.

810 SUSTAINABLE FORESTRY

"the practice of managing dynamic forest ecosystems to provide ecological, economic, social and cultural benefits for present and future generations" NR 44.03(12) Wis. Adm.

Code and s.28.04(1)(e), Wis. Stats.

For the purpose of this chapter, <u>sustainable</u> <u>forestry</u> will be interpreted as the management of the Forest to meet the needs of the present without knowingly compromising the ability of future generations to meet their own needs (economic, social, and ecological) by practicing a land stewardship ethic which integrates the growing, nurturing, and harvesting of trees for useful products with the conservation of soil, air and water quality, and wildlife and fish habitat. This process is dynamic, and changes as we learn from past management.

810.1 TOOLS IN INTEGRATED RESOURCE MANAGEMENT

810.1.1 Compartment Recon

The County will support and utilize the compartment reconnaissance procedures as set forth by the DNR Public Forest Lands Handbook 2460.5. WisFIRS serves as the database for housing recon information.

810.1.2 Forest Habitat Classification System

The Forest Habitat Classification System (*A Guide to Forest Communities and Habitat Types of Northern Wisconsin Second Edition; Kotar, et al*.) is a natural classification system for forest communities and the sites on which they develop. It utilizes systematic interpretation of natural vegetation with emphasis on understory species.

Forest Habitat Classification Types are discussed in greater detail in the "Integrated Resource Management Units" (Section 880) section of this chapter.

810.1.3 Soil Surveys

Forestry staff's knowledge of forest ecology and their experience across the landscape can assist in associating forest habitat types and site indices with soil type information. These associations can be beneficial in determining management prescriptions for specific sites.

WisFIRS contains soil survey data, and this information can also be found on the NRCS website-based soil survey.

810.1.4 Ecological Landscapes of Wisconsin

The Wisconsin DNR uses Ecological Landscapes of Wisconsin (WDNR Handbook 1805.1) which is an ecological land classification system based on the National Hierarchical Framework of Ecological Units (NHFEU). Ecological landscapes distinguish land areas different from one another in ecological characteristics. A combination of physical and biological factors including climate, geology, topography, soils, water, and vegetation are used. They provide a useful tool and insight into ecosystem management. Land areas identified and mapped in this manner are known as ecological units.

Generally accepted silvicultural systems are prescribed on a stand level scale, in recognition of the position within an ecological landscape.

810.1.5 Integrated Pest Management

"The maintenance of destructive agents, including insects, at tolerable levels, by the planned use of a variety of preventive, suppressive, or regulatory tactics and strategies that are ecologically and economically efficient and socially acceptable"

The Committee has the authority to approve and direct the use of pesticides and other reasonable alternatives in an integrated pest management program on the Forest.
Refer to Chapter 600 (610.3) for more detailed discussion and integrated pest management strategies.

810.1.6 Best Management Practices for Water Quality

The most practical and cost-effective method to assure that County forest operations do not adversely affect water quality on the County Forest is to utilize "best management practices" (BMP's) as described in *Wisconsin's Forestry Best Management Practices for Water Quality*. *Publication number FR-093*.

Consistent with the aforementioned manual (page 6), Vilas County will use BMP's on the Forest with the understanding that the application of BMP's may be modified for specific site conditions with guidance from a forester or other natural resource professional. Modifications will provide equal or greater water quality protection or have no impact on water quality. Areas with highly erodible soil types, proximity to streams or lakes, or steep slopes may require mitigating measures in excess of those outlined in the manual. All Vilas County employees engaged in forest or recreation project management. will receive BMP training. Additionally, Vilas County will encourage BMP training of all logging and construction contractors that operate on County Forest.

810.1.7 Fire Management

Reference Chapter 600.

810.1.7.2 Prescribed Fire

Prescribed burning on the County Forest may play an important role in management. Many of the plant communities present today are the result of wild fires.

As the needs are presented to regenerate or maintain timber types or other plant communities, the Committee will examine the costs and benefits of each opportunity. Increased regulations, the county's cost of completing the burn, and the risk of breakouts and uncontrolled fires will have to be considered with any benefits of vegetation management through prescribed burning.

All prescribed burning will be done in accordance with Wisconsin State Statutes 26.12, 26.14, and the DNR Prescribed Burn Handbook 4360.5 and in cooperation with the Department of Natural Resources per section 605.5 of this plan.

810.1.8 Outside Expertise, Studies and Survey

Additional data necessary to make management decisions on the County Forest will be sought from agencies or individuals, who have the best capability and technical expertise, including, but not limited to:

- Water Resources: WDNR
- Wildlife Resources: WDNR
- Soil Resources: NRCS
- Mineral Resources: WDNR
- Wetland Resources: WDNR, Army Corps of Engineers, County Zoning
- Navigable Streams: WDNR, Army Corps of Engineers, County Zoning
- Floodplains: County Zoning
- Cultural Resources: WDNR, State Historical Society
- Entomology / Pathology: WDNR
- Endangered Resources: WDNR
- Forestry: Cooperative Field Trials, see WDNR website
- Other subjects as needed

810.1.9 Local Silvicultural Field Trials

To date, numerous field trials have been completed or are ongoing on the Vilas County Forest. These trials include:

- Strip Clear Cutting for Northern Hardwood Regeneration
- Shelterwood Cutting for Northern Hardwood Regeneration
- Seed Tree Harvesting for Red Pine Regeneration
- Group Selection followed by scarification for Northern Hardwood Regeneration
- Group seed tree retention for swamp conifer regeneration
- Aspen group retention to promote natural jack pine regeneration through scarification

815 MANAGEMENT CONSIDERATIONS TO REDUCE LOSS

815.1 RISK FACTORS

815.1.1 Wind

Vilas County will mitigate potential losses from wind by maintaining forest stem densities across the forest which allow for production of tree heights and stem diameters that provide optimum growth and resistance to wind events. When wind events do impact the forest, preparation of salvage timber sales will occur as soon as practicably possible with the sales sold and harvesting completed as rapidly as possible.

815.1.2 Flooding

Flooding on the Vilas County Forest is most often related to beaver activity on streams. Vilas County will mitigate potential losses from flooding by monitoring of beaver activity and taking action to remove problem beavers as soon as practicably possible.

815.1.3 Fire

Wildfire loss on the Vilas County Forest is the highest risk factor- To mitigate wildfire, the County will participate in community wildfire prevention programs and will establish plans and harvesting practices on the forest and near recreational sites to provide for fire breaks and fuel reduction activities. A system of forest trails and roads will be maintained to provide for fire response access.

815.1.4 Insects and Disease

Loss on the Vilas County Forest from insects and disease are not avoidable. To mitigate insect and disease losses, the County will actively monitor forest stands for insects and disease and take decisive actions as necessary to salvage timber losses and reduce the spread of insect infestations and disease transmission. A system of forest trails and roads will be maintained to provide for insect and disease monitoring.

815.1.5 Invasive Species

Introduction and propagation of invasive species on the forest has the potential to limit regeneration of forest species. To mitigate effects of invasive species, the County will actively monitor forest stands for invasive species and take decisive actions as necessary reduce the limit invasive species introduction and spread. Mandatory equipment inspections will be required prior to any equipment movement on to the County Forest. This will be part of any forestry or recreation project contract.

815.1.6 Climate Change

Climate change is likely to have effects on the Vilas County forest. The probable effects to the forest will be increased frequency of wind, flooding and fire events and increased exposure to stress which may increase losses from insect and disease. When appropriate data is available, Vilas County may consider promotion of tree species which reflect future climate predictions to mitigate losses related to Climate Change.

815.1.7 Timber markets

Changing timber markets have the potential of eliminating or reducing the economic viability to manage specific timber resources. Currently there are limited markets for large diameter red and white pine sawtimber with one local mill taking that product. The loss of that market would severely affect the management of red and white pine stands in larger diameters. Low quality oak and aspen are also limited markets. Vilas County will mitigate loss of economic management viability be managing forest stands for optimum production of quality products and by conversion of forest types or rotation of types followed by planting when economic maturity is reached. Some reserve as old growth and losses for those reserves will be considered up to 15% of a stand value.

820 PLANT COMMUNITIES MANAGEMENT

Vilas County recognizes the importance of maintaining the diversity of the forest under an ecosystem approach. The process involved in making management decisions to encourage or not encourage specific species or communities is complex. It includes an understanding of:

- Objectives of the County
- Integration of landforms, soils, climate, and vegetative factors
- Habitat classification
- Past, present and future desired condition
- Surrounding ownership patterns and general objectives
- Wildlife habitat and other values
- Social needs

820.1 SILVICULTURAL PRACTICES/TREATMENTS

Silviculture is the art and science of controlling forest composition, structure, and growth

to maintain and enhance the forest's utility for any purpose. These practices are based on research and general silviculture knowledge of the species being managed. The goal is to encourage vigor within all developmental stages of forest stands, managed in an even aged or uneven aged system. The application of silviculture to a diverse forest needs a unified, systematic approach. The DNR Public Forest Lands Handbook (2460.5) and DNR Silvicultural Guidance will be used as guidelines for management practices used on the County Forest.

820.1.1 Natural Regeneration

Where feasible, natural regeneration will be encouraged through the use of silvicultural methods that promote regrowth and recruitment of the forest. In general, the particular silvicultural method chosen will depend on the biological functions of the target species or forest type.

820.1.1.1 Clearcutting/Coppice

Clearcutting is a silvicultural method used to regenerate shade intolerant species. Complete, or nearly complete removal of the forest canopy will stimulate the regeneration and growth of species such as aspen, jack pine and white birch. This method is also used as a final rotation removal in species such as red oak, red pine and others. Tree retention guidelines are followed when prescribing clearcut or coppice cuts.

820.1.1.2 Shelterwood / Seed Tree

Shelterwood harvest is a method used to regenerate mid-shade tolerant and shade tolerant species. Partial canopies stimulate regeneration, enhance growth and can provide seed source. Canopies are eventually removed. This method is used for white birch, white pine, red oak, and northern hardwood (when managing even aged).

820.1.1.3 All Aged Regeneration Harvests

All aged regeneration harvests are used in shade tolerant species. Gaps in the

forest canopy allow regeneration to occur throughout the stand. Over time, multiple entries into the stand will create multiple age class structure with the intent of creating a fully regulated stand. All aged regeneration harvests may be prescribed in the form of single tree selection, group selection or patch selection. This method is used in northern hardwood and occasionally in swamp hardwoods (when managing for all aged)

820.1.1.4 Prescribed Burning

Prescribed burning may be utilized as a tool to promote regeneration. A number of forest types in Vilas County are ecologically tied to fire. Burning may create seeding conditions or release regeneration from competing vegetation. Prescribed fire may be used for site preparation to promote regeneration of red oak, jack pine, white pine and red pine on the forest.

820.1.1.5 Soil Scarification

Scarification is a technique used to prepare a seedbed beneath forest stands scheduled for harvest and regeneration. This mechanical disturbance that exposes bare mineral seedbeds and creates conditions necessary for regeneration of pine species. Disturbance that mixes seed into duff and soil layers creates optimal conditions for regeneration of oak, white birch, white pine, red pine, jack pine, fir and others. Vilas County utilizes root rakes, straight blade, anchor chain and mulcher heads for soil scarification. In some instanced other implements for scarification may be utilized as appropriate.

820.1.1.6 Other

Other natural regeneration techniques may be considered where necessary and appropriate. New methods for natural regeneration are continually tested for effectiveness.

820.1.2 Artificial Regeneration

When natural regeneration fails, or when tree species present do not coincide with

management objectives for the site, artificial means will be employed to establish a desirable stand of trees. Artificial regeneration on a site usually requires some form of site preparation followed by seeding or planting.

820.1.2.1 Mechanical Site Preparation

Mechanical site preparation includes the use of soil disturbance equipment such as a disc, roller chopper, patch scarifier, disk trencher or V-plow prior to tree planting or seeding. These types of equipment are used to reduce logging debris to a smaller size, incorporate debris into the soil, clear brush and debris from the site, and to reduce competition from other vegetation.

820.1.2.2 Chemical Site Preparation

Herbicide application can be an effective means of controlling unwanted vegetation in order to establish seedlings or plantations. It should be used sparingly and in situations where mechanical treatment is not expected to provide the level of vegetative control needed. Chemical will be applied in strict accordance with label recommendations, requirements, and under the oversight of a certified applicator. Herbicides will normally be applied with motorized, ground based equipment and hand applications. A written prescription for each herbicide application will be prepared and kept on file.

820.1.2.3 Prescribed Burning

Prescribed burning for site preparation can be used to reduce logging debris, clear the site, reduce competing vegetation, and to release nutrients into the soil.

820.1.2.4 Tree Planting / Seeding

Both machine and/or hand planting/seeding will be utilized to insure adequate regeneration. The selection of species will be determined according to the specific management objectives and capabilities of each site. Planting or seeding will primarily occur in areas where natural regeneration is inadequate or conflicts

with the management goals of the site. County will make all reasonable efforts to source seeds/seedlings from local genetics.

820.1.3 Intermediate Treatments

Intermediate treatments are those practices used to enhance the health and vigor of a forest stand. In general, intermediate treatments are applied to forest stands managed as even aged.

820.1.3.1 Mechanical Release

Mechanical release is the removal of competing vegetation by means other than herbicide or fire. Mechanical may include releasing young pine plantations from competing vegetation using chain saws or other hand-held equipment; or mowing to release regeneration, both naturally produced or planted.

820.1.3.2 Chemical Release

Chemical Release is the removal of competing vegetation from desirable trees through the use of herbicides. It should be used sparingly and in situations where mechanical treatment is not expected to provide the level of vegetative control needed. Chemical will be applied in strict accordance with label recommendations, requirements and under the oversight of a certified applicator. A written prescription for each herbicide application will be prepared and kept on file.

820.1.3.3 Non-Commercial Thinning (TSI)

In general, most thinning needs are accomplished through commercial harvest operations. Non-commercial thinning may be considered if the individual site requirements, funding and/or available labor make it desirable.

820.1.3.4 Thinning / Intermediate Cuts

Management of some even aged forest types necessitates the use of commercial thinning, also known as intermediate harvests, to maintain forest health and vigor.

Thinning is generally prescribed in forest types such as red pine, red oak, and in cases of even aged hardwood management. Thinning may be prescribed on other even aged types as appropriate and where feasible. Intermediate harvests include prescriptions for residual densities, marking priorities, spacing, crown closure, diameter distribution, or other measurements.

820.1.3.5 Pruning

Pruning is the removal of limbs from lower sections of trees to increase log quality. Major pruning efforts were conducted in the past but it is not generally recognized as economically viable on the forest.

820.2 SILVICULTURAL PRESCRIPTIONS

820.2.1 Even-Aged Management

A forest stand composed of trees having relatively small differences in age. Typical cutting practices include: clear cutting, shelterwood cutting and seed-tree cutting. Even aged management is generally required to manage shade intolerant, early successional forest types.

820.2.1.1 Aspen

The Aspen Cover Type is predominant on 38% of the Vilas County Forest covering 13,591 acres in 376 distinct stands. Stands range from 1 year to 120 years or age With the largest acreage of stands ranging from 36-50 years of age.

Aspen is the most abundant timber type on the Vilas County Forest. The Aspen stands managed today originated after the logging and wildfires of the late 1800's through the early 1900's. The generation of Aspen established at that time matured and was harvested by the mid to late 1990's. Aspen management for the period of this Plan considers the beginning of the harvest of the second generation of established Aspen stands.

Although the Aspen resource in the Northern Great Lakes Region has been steadily declining since the 1960's, it is the only region in the United States where there is a significant amount of this timber type. This reduction of Aspen is due to the lack of harvests and selection harvests that discriminate against Aspen, both leading to the natural succession to more shade tolerant species.

Because Aspen provides habitat values to a wide variety of wildlife and is an important species for the wood products industry, the Vilas County Forest is committed to maintaining its Aspen acreage.

Management Prescriptions

Silviculture of Aspen is characterized by regenerating mature stands by use of the clearcut coppice method with consideration given to aesthetics, wildlife habitat, and a goal of moving toward regulation of the harvest by attaining equal acreages in each stage of growth. It is recognized that as the second generation of Aspen matures there will be opportunities, at the time of harvest, to naturally convert a portion of some stands to other species including white pine and oak. Conversion opportunities will be considered on a case by case basis and are not anticipated to have an appreciable effect on maintaining the current acreage of Aspen timber type.

Aspen Summary:

Shade tolerance:	Intolerant
Intermediate treatments:	None
Median rotation age:	50
Primary regeneration method:	Natural
Harvest method:	Clearcutting with coppice
Habitat value:	Early successional related species
Economic value:	Fiber production / bolts
Insect disease considerations:	Hypoxylon and other cankers
Trends:	General declines on statewide acreage, natural conversion to other types due to maturation of forest types
Landscape considerations:	Retain acreages and improve diversity of age classes where possible

820.2.1.2 Jack Pine

The Jack Pine Cover Type is predominant on 15% of the Vilas County Forest covering 5,453 acres in 198 distinct stands. Stand range from 1 year to 95 years or age with the largest acreage of stands in the 6-35 years of age range.

Jack Pine occurs throughout the Vilas County Forest on sandy soils. The establishment of Jack Pine on these soils naturally followed the severe fires of the late 1800's and early 1900's. During the late 1930's and early 1940's plantations of Jack Pine were established by the Civilian Conservation Corps in the aftermath of wildfires and failed farms.

Due to the characteristics of being shade intolerant and short lived there is a decline of the presence of Jack Pine in the region of the Northern Great Lakes as stands are converting to other species. Because of the regional decline of this timber type and the characteristics of Jack Pine to withstand frost and droughty soils, it is the goal of the Vilas County Forest to maintain the acres of Jack Pine type with minimal conversion to other species. There are 5,491 acres of Jack Pine timber type currently within the Forest.

Management Prescriptions

Silviculture of Jack Pine on the Vilas County Forest is even-aged, characterized by clearcutting to provide the exposure to sunlight needed for regeneration and growth and planting combined with natural seeding to regenerate the stands. The use of herbicide is, at times, necessary to reduce competition, ensure seedling survival, and eliminate the conversion of stands to other species.

Jack Pine Summary:

Shade tolerance:	Intolerant
Intermediate treatments:	None
Median rotation age:	60
Primary regeneration method:	Natural
Harvest method:	Clearcutting with site preparation to stimulate natural seeding

Habitat value:	Early successional related species. Important habitat for special concern and endangered species including spruce grouse, Kirtland's Warbler and Karner Blue Butterfly
Economic value:	Fiber production / bolts
Insect disease considerations:	Jack Pine budworm
Trends:	General declines on statewide acreage from lack of natural fire disturbance.
Landscape considerations:	Retain acreages and diversity of age classes where possible

820.2.1.2 Red Pine and White Pine

The Red Pine Cover Type is predominant on 12% of the Vilas County Forest covering 4,413 acres in 232 distinct stands. Stand range from 1 year to 135 years of age with the largest acreage of the stands in the 21-40 year, 61-80 year, and 106-125 year ranges.

The White Pine Cover Type is predominant on 5% of the Vilas County Forest covering 1,913 Acres in 93 distinct stands. Stand range from 1 year to 135 years of age with the largest acreage of the stands are in the 15-25 year age class and the 75-125 year age classes.

Red and White Pine Summary:

Shade tolerance:	Intolerant
Intermediate treatments:	Thinnings
Median rotation age:	110
Primary regeneration method:	Natural Seeding/ Replanting
Harvest method:	Thinnings followed by Clearcutting with site preparation for natural regeneration or replanting
Habitat value:	High value for large diameters cavity nesting species and high vertical structure components with special consideration for Bald Eagle habitat
Economic value:	Sawlogs and Fiber production

Insect disease considerations:	Red Pine Decline, bark beetles, red rot
Trends:	Natural stands declining due to regeneration limitations without natural disturbance regimes
Landscape considerations:	Retain natural pine acreages and diversity of age classes where possible. Consider monetary loss for retention of super-canopy and old growth components

The Civilian Conservation Corps established red pine plantations in the late 1930's on lands where wildfires and failed farms once were. From 1940-1980 the establishment of Red Pine plantations continued in non-forested areas; however, planting was infrequent. Beginning in 1980 an annual effort was made to establish trees in the remaining non-forested areas as well as convert some harvested stands of Jack Pine and White Birch to Red Pine.

Plantation establishment continued through the 1990's to 2000 with an emphasis on diversity, mixing Red Pine, White Pine, White Spruce, and Tamarack. After 2000, opportunities for the establishment of new stands of Red and White Pine have declined with the planting of open areas of upland accomplished and the completion, for all practical purposes, of the harvest of the White Birch timber type. Future additions to the Red and White Pine timber type will be the natural conversion of portions of Aspen stands and possible conversion opportunities in the Red Maple timber type.

Management Prescriptions

Silviculture of Red and White is conducted as typical even-aged management, where trees are selected to remain in the stand or be harvested according to their risk, their place in the canopy, and spacing of the crowns of the residual trees. During the period of this Plan, Red and White Pine improvement thinning will be initiated on all stands where stocking exceeds 110 square feet of basal area per acre. Stand densities will be retained according to red pine management guides until stands exceed 125 years of age at which time, clearcutting of the stand will be completed to in preparation for replanting of stands.

In Red Pine stands with an adequate White Pine seeding component, the decision will be made to initiate White Pine regeneration and move toward a two-aged stand. This may include post-sale treatments to encourage natural reproduction and/or prepare the site for planting. Herbicide treatment may be necessary to reduce competition prior to scarification. This same management outline will be considered for some Red Pine plantations after a third thinning is conducted. Current thought is to harvest crop trees at 130 years of age, however, aesthetics and age class distribution of the resource and maintenance of naturally produced pine stands may influence retention beyond 130 years for some stands, where economically feasible.

820.2.1.2 Oak

The Red Oak Cover Type is predominant on 8% of the Vilas County Forest covering 2,774 Acres in 80 distinct stands. Stand range from 11 year to 130 years or age with the largest acreage of the stands are in the 30-50 year age classes and the 80-115 year age classes

The Scrub Oak Cover Type is predominant less than 1% of the Vilas County Forest covering 38 Acres in 2 distinct stands. Stand range from 1 year to 5 years or age. These stands are growing on sites not suitable for production of quality oak, including extremely drained sand sails with limited nutrient content.

Vilas County intends to maintain the current acres of Oak type on the County Forest. Currently only 8% of the forest acreage is Oak type. The Oak Forest Cover types are primarily made up of one of two oak types on the Vilas County Forest, Northern Red Oak *(Quercus rubra)* on higher quality sites and habitat types and the scrub oak type on sandy soils and poorer habitat types. The scrub oak type on the Vilas County Forest generally consists of Northern Pin Oak (*Q. ellipsoidalis)*, and Northern Red Oak hybrids; a cross between Northern Red Oak and Northern Pin Oak. Oak is a moderately shade tolerant species scattered

throughout the county forest. Oak forests generally require a significant disturbance event such as fire or blow-down and fire to regenerate and develop. In the absence of management or disturbance, red oak stands tend to convert to other, more shade tolerant hardwood species or white pine. Much of the current oak developed during the large scale cutover and wildfire era in the early 1900's. This forest type has high value to a wide number of game and non-game wildlife species.

Management Prescriptions

The general management objective within the oak types is to maintain oak to produce the maximum quantity and quality of sawtimber and veneer within ecological and economic limitations and maintain its wildlife and mast producing benefits. Long-term management objectives are to maintain the Oak timber type based on site quality and to use silvicultural treatments that will take advantage of current stand opportunities to facilitate regeneration or conversion to other types while maintaining a prominent component of oak. Intermediate thinnings will be used to develop oak stands and to maximize the quantity and quality of a stand's oak component. Shelterwood cuts will be used to regenerate oak stands as they near either economic or ecological limitations, depending on site characteristics and individual stand needs. Oak is typically regenerated through the shelterwood method and will take place at 90-150+ years of age. In a shelterwood harvest, about 30-40% of the mature trees are harvested, depending on site characteristics, to allow for sunlight and the regeneration of young oak trees. After the young oak trees have regenerated, about 10 to15 years later, the majority of the mature trees are harvested, while maintaining 5 to 10 old trees per acre for age and structural diversity and wildlife. Other management techniques that may be applied when needed include single-tree selection, clear-cuts with reserves, scarification, hand-release and herbicide treatments to promote regeneration. Planting oak with herbicide treatments and browse deterrent methods may also be employed. In mixed stands of red oak with white pine, northern hardwoods or other species manage to promote components of older long-lived trees and natural regeneration

of these species and other secondary species. On nutrient poor droughty soils with scrub oak stands, use clearcutting to regenerate a component of oak along with aspen/white birch/jack pine.

Oak Summary:

Shade tolerance:	Intolerant
Intermediate treatments:	Thinnings
Median rotation age:	120
Primary regeneration method:	Natural
Harvest method:	Seed-tree with site preparation to stimulate natural seeding
Habitat value:	High value mast production for deer, wild turkey, bear and other wildlife.
Economic value:	Quality sawlogs and fiber production
Insect disease considerations:	Oak Wilt
Trends:	General declines on statewide acreage due to oak wilt
Landscape considerations:	Retain acreages and diversity of age classes where possible

830.1.4 Black Spruce, Tamarack, White Cedar and Swamp Conifer

The Black Spruce Cover Type is predominant on 11% of the Vilas County Forest covering 3,841 Acres in 138 distinct stands. Stand range from 1 year to 120 years or age with the largest acreage of the stands in the 9-25 year and 79-101year ranges.

The Tamarack Cover Type is predominant on 2% of the Vilas County Forest covering 880 acres in 35 distinct stands. Stand range from 1 year to 100 years of age with the largest acreage of stands in the 76-100 year age classes

The White Cedar Cover Type is predominant on less than 1% of the Vilas County Forest covering 175 acres in 11 distinct stands. Stand range from 51 years to 164 years of age with the largest acreage of stands in the 91-105 year age classes.

The Swamp Conifer Cover Type is predominant on less than 1% of the Vilas County Forest covering 30 acres in 2 distinct stands. Stand range from 96 years to 115 years of age.

A main goal of Vilas County is maintaining black spruce, tamarack and white cedar forest cover types on sites where they currently exist. Vilas County will emphasize age class diversity and promote improved species composition through regeneration of tamarack and black spruce thereby improving spruce grouse *(Dedragapus canadensis*) habitat. Vilas County will retain all white cedar in timber harvests of forested wetlands due to wildlife importance and small proportion of the species on the forest.

Black spruce and tamarack will be managed for production of the maximum quantity of pulpwood and sawtimber where possible and permissible under wetlands protection restrictions. Management concerns of special importance for lowland forest types include Best Management Practices (BMP's) for water quality, endangered resources, biodiversity, wildlife, and aesthetics. Management activities will be limited within commercially unproductive wetlands with small sized slow growing trees, or areas of open bog and marsh. Access across these stands on a frozen ground temporary road may be required.

Management Prescriptions

Regeneration of productive stands of tamarack and black spruce may be by even-aged management techniques (clear-cut) providing for regeneration from natural seeding, following the guidelines in the DNR Silvicultural and Forest Aesthetics. In sensitive areas with deep organic soils and reduced risk of windthrow, uneven-aged management through selective harvesting may provide an alternative. Timber harvests on forested wetlands will be conducted only on frozen ground conditions or when there is sufficient snow cover to prevent rutting and potential damage to organic soils.

Swamp Conifer Summary:

Shade tolerance:	Intolerant
Intermediate treatments:	Thinnings
Median rotation age:	100
Primary regeneration method:	Natural
Harvest method:	Clearcut with retention of trees for natural seeding
Habitat value:	High value for winter cover as well as habitat for spruce grouse
Economic value:	Fiber production
Insect disease considerations:	Spruce bud worm
Trends:	Some decline due to high water tables
Landscape considerations:	Retain acreages and diversity of age classes where possible

820.2.1.2 Balsam Fir

The Balsam Fir Cover Type is predominant on less than 1% of the Vilas County Forest covering 162 acres in 12 distinct stands. Stand range from 21 years to 95 years of age with the largest acreage of stands in the 21-40 year age classes.

Balsam fir is a common associate on most forest cover types and creates severe competition for regeneration of other types. Balsam fir will not be managed to increase the composition of it on the forest, in pure stands, balsam fir will be managed for production of the maximum quantity of pulpwood. Management activities will be limited within commercially unproductive wetlands.

Management Prescriptions

Regeneration of productive stands of balsam fir may be by even-aged management techniques (clear-cut) providing for regeneration from natural seeding, following the guidelines in the DNR Silvicultural and Forest Aesthetics.

No summary due to small acreage.

820.2.1.2 Red Maple

The Red Maple Cover Type is predominant on less than 1% of the Vilas County Forest covering 67 acres in 4 distinct stands. Stand range from 16 years to 105 years of age with the largest acreage of stands in the 91-105 year age classes.

Red Maple is a common associate on many forest cover types and creates severe competition for regeneration of other types. Red maple will not be managed to increase the composition of it on the forest, in pure stands, red maple will be managed to develop into mixed stands for production of the maximum quantity of pulpwood.

Management Prescriptions
Regeneration of productive stands of red maple may be by even-aged management techniques (clear-cut) providing for regeneration from natural seeding and stump sprouting following the guidelines in the DNR Silvicultural and Forest Aesthetics.

No summary due to small acreage.

820.2.1.2 White Birch

The White Birch Cover Type is predominant on less than 1% of the Vilas County Forest covering 97 acres in 4 distinct stands. Stand range from 91 years to 100 years of age with the largest acreage of stands in the 96-100 year age classes.

Vilas County intends to maintain the current acres of White Birch type on the County Forest.

Management Prescriptions
Regeneration of productive stands of white birch may be by even-aged management techniques (clear-cut) providing for regeneration from natural seeding and stump sprouting following the guidelines in the DNR Silvicultural and Forest Aesthetics.

No summary due to small acreage.

820.2.1.2 White Spruce and Miscellaneous Conifer

The White Spruce Cover Type is predominant on less than 1% of the Vilas County Forest covering 60 acres in 5 distinct stands. Stand range from 21 years to 95 years of age with the largest acreage of stands in the 21-25 years and 91-95 years age classes.

The Miscellaneous Coniferous Cover Type is predominant less than 1% of the Vilas County Forest covering 21 Acres in 1 distinct stand. This stand is 94 years of age.

Miscellaneous conifer type includes stand which have pine or spruce types which comprise 50% or more of the basal area in sawtimber and pole timber stands. This type is commonly utilized for areas which include uncommon species which have been introduced into an area in plantations such as Scotch pine (Pinus sylvestris) , Norway spruce,(Picea abies) or Colorado Blue Spruce (Picea pungens). This type may also be utilized when no individual species is the dominant type within a stand and it cannot be determined what the future dominance will be. On the Vilas County Forest, this type is utilized for Norway Spruce plantations which were historically planted.

White spruce and Miscellaneous Conifer will be managed for production of the maximum quantity of pulpwood. Management activities will be limited within commercially unproductive wetlands.

Management Prescriptions

Regeneration of productive stands may be by even-aged management techniques (clear-cut) providing for regeneration from natural seeding, following the guidelines in the DNR Silvicultural and Forest Aesthetics.

No summary due to small acreage.

820.2.1.2 Swamp Hardwood

The Swamp Hardwoods Cover Type is predominant less than 1% of the Vilas County Forest covering 15 Acres in 2 distinct stands. These stands are 91 and 145 years of age.

Vilas County intends to maintain the current acres of the Swamp hardwood type on the County Forest. Due to the scarcity of the type on the forest and difficulty in regeneration of the type, these stands will be maintained by passive management with no activity planned within the type.

No summary due to small acreage.

820.2.2 Uneven-Aged Management

A forest stand composed of trees in various age and size classes. The typical cutting practice is selection cutting, where individual trees are removed from the stand. Regeneration is continually occurring after the stand is cut. Uneven-aged management is generally used to manage shade tolerant forest types.

830.1.5 Northern Hardwoods

The Northern Hardwoods Cover Type is predominant on 5% of the Vilas County Forest covering 1,899 acres in 44 distinct stands. Northern hardwood stands are in an uneven aged state where many age classes are represented in each stand, thus stand ages are not tracked by age.

Much of the current northern hardwoods developed during the large scale cutover and wildfire era in the early 1900's, creating the mostly even-aged northern hardwoods that we have on the forest today. The majority of Vilas County's northern hardwood stands are located in the northwest portion of the County Forest. Most northern hardwood species are light seeded and range from shade tolerant (sugar maple) to intermediate shade tolerant (white ash). Red maple and

basswood are capable of proliferating from stump sprouts. This forest type is generally managed as an all-aged forest stand. Most of the hardwoods will be managed with the goal of maximum production of high quality hardwood sawtimber; all-age management is the preferred method to diversify tree ages, sizes and types of tree species within each stand.

Management Prescriptions

Once stands reach an all-aged structure, Vilas County will use selection harvest (uneven aged management) as the primary management tool, and vary harvest intensity according to site-specific conditions and needs. Vilas County will plan harvests to maintain or increase species diversity in these stands. Stands will be evaluated for silvicultural needs, regeneration, spacing, density and other stands conditions every 12-20 years or when basal area reaches 120 square feet per acre. Uneven aged management guidelines call for thinning to a residual basal area of approximately 80 square feet per acre, removing high risk, cull, and over-mature trees. Thinning guidelines also target spacing and removing trees in overstocked diameter classes.

Depending on the site conditions and objectives of a particular stand, more intensive silviculture systems such as shelterwood harvest, group selection, or gap creation may be used. These techniques may be applied to an entire stand or to parts of a stand in conjunction with a selection harvest.

Stands without sufficient crop trees may be considered for even aged management. The latest research in northern hardwood management encourages the use of even-age management when appropriate. Since the term even-age management may be somewhat confusing to hardwood managers, some explanation is necessary. Even-age management, as used in northern hardwoods, refers to a system of management in which the entire stand is regenerated at one time as a result of a regeneration harvest, whether it is a shelterwood or group selection harvest operation. In this context even-age management may lead to an eventual "clearcut" but not as traditionally practiced. Situations most likely to call

for even-age management are encountered when dealing with stands without sufficient crop trees, stands on the dry-mesic habitat types, or when attempting to regenerate intermediate shade tolerant species like white ash and black cherry or relatively light-seeded species such as yellow birch, ash and red maple.

In addition, an intermediate even-age management practice will often be used for initial thinnings in pole stands even though the long-term objective is all-age management. A northern hardwood stand is defined as currently being even-aged when the average DBH is less than 9.0 inches and when basal area in sawtimber trees, 11 inches DBH and up, is less than 50 sq. ft. per acre. Stands regarded as even-aged by this definition may be thinned to lower basal area levels. Vilas county forest managers have the option of switching from even-age to all-age management at any subsequent thinning. Northern hardwood stands are considered to be an important cover type on the Vilas County Forest and efforts should be made to assure it is retained on the landscape.

Northern Hardwoods Summary:

Shade tolerance:	Intolerant to mid tolerant
Intermediate treatments:	Improvement through selection
Median rotation age:	N/A- all aged management
Primary regeneration method:	Natural
Harvest method:	Selective harvesting with modifications for regeneration (canopy gaps, group selection,)
Habitat value:	Seasonal use by wide variety of wildlife.
Economic value:	High value sawlogs and fiber production
Insect disease considerations:	Limited due to species diversity
Trends:	stable, species simplification to sugar maple dominant
Landscape considerations:	Retain acreages due to limited potential on County forest

830.1.4 Hemlock

The Hemlock Cover Type is predominant less than 1% of the Vilas County Forest covering 30 Acres in 3 distinct stands. Stand range from 91 year to 100 years or age.

Vilas County intends to maintain the current acres of the Hemlock type on the County Forest. Due to the scarcity of the type on the forest and difficulty in regeneration of the type, these stands will be maintained by passive management with no activity planned within the type.

No summary due to small acreage.

820.3 LOCALLY UNCOMMON TREES / FOREST TYPES

The presence or lack of a particular tree species is dependent on land capability, climate, natural range, natural or human disturbance and many other factors. The following trees and types are considered uncommon on the Vilas County Forest and likely across the general region. These trees may be left as reserves in even aged management prescriptions, or in thinnings and all aged regeneration harvests.

820.3.1 American Elm (Ulmus americana.) is scarce primarily due to Dutch elm disease. Healthy looking elm may be left uncut in hope that they may continue on the landscape as potential resistant seed sources.

820.3.2 Butternut (Juglans cinerea) is declining due to butternut canker. Healthy individuals that appear to be canker free will be reserved in the forest as potential resistant seed sources.

820.3.3 Eastern Hemlock (Tsuga canodensis) is a highly preferred deer and small mammal browse species. Regeneration is difficult and remnant stands will be retained to provide seed sources for future management activities

820.3.4 White Cedar (Thuja occidentalis) is a highly preferred deer and small mammal browse species. Regeneration is difficult and remnant stands will be retained to provide seed sources for future management activities

820.4 FOREST TYPES REQUIRING INTENSIVE EFFORT TO REGENERATE

There are certain forest types within the County Forest that are difficult to regenerate. In

many cases, this difficulty may be related to the exclusion of fire from the landscape, deer herbivory or other factors. The following list itemizes forest types with difficult regeneration and County management goals:

820.4.1 White birch

White birch is a shade intolerant species normally found in even aged stands. It appears white birch evolved to regenerate after disturbances such as fire. The County is committed to retain as much of the existing acreage of white birch as possible. Regeneration efforts will include pre-sale salmon blade scarification.

820.4.2 Northern red oak

Northern red oak is a shade intolerant to mid tolerant species found in primarily even aged stands. Northern red oak appears to require disturbance to regenerate and herbivory appears to be a limiting factor on regeneration success. The County is committed to retain as much of the existing acreage of northern red oak as possible. Regeneration efforts will focus on timing soil scarification with good acorn crops and shelterwood harvests. Regeneration may require prescribed burning to release seedlings from competing vegetation.

820.4.3 Jack pine

Jack pine is a shade intolerant found in primarily even aged stands. Jack pine appears to require disturbance to regenerate with fire being a main component. The County is committed to retain as much of the existing acreage of as possible. Regeneration efforts will focus on timing soil scarification with retention of cones within harvested tops. Regeneration may require prescribed burning to release seedlings from competing vegetation.

820.5 INVASIVE PLANT SPECIES OF CONCERN

Invasive plants can cause significant damage to the forest. Invasive species can displace native plants and hinder the forest regeneration efforts. Preventing them from dominating forest understories is critical to the long-term health of the forest. There are a

number of invasive plant species in varying densities on the County Forest. Some warrant immediate and continual treatment efforts while others may be allowed to remain due to extent and financial ability to control them. The County will continue to train staff in invasive species identification as well as attempt to secure funding sources to control them as much as is practical. Listings of invasive plant species of concern can be located in Section 611.

820.6 LEGALLY PROTECTED AND SPECIAL CONCERN PLANT SPECIES

There are plants in Wisconsin that are protected under the Federal Endangered Species Act, the State Endangered Species Law, or both. On County Forest, no one may cut, root up, sever, injure, destroy, remove, transport or carry away a listed plant without a valid endangered or threatened species permit. There is an exemption on public lands for forestry, agriculture and utility activities under state law. The County will, however, make reasonable efforts to minimize impacts to endangered or threatened plants during the course of forestry/silviculture activities (typically identified in the timber sale narrative).

The Wisconsin Department Natural Resources Bureau of Natural Heritage Conservation tracks information on legally protected plants with the Natural Heritage Inventory (NHI) program. The NHI program also tracks Special Concern Species, which are those for which some problem of abundance or distribution is suspected, but not yet proven. The main purpose of this category is to focus attention on certain species before they become threatened or endangered.

The County has access to this data under a license agreement and is committed to reviewing this database for endangered resources that may occur within proposed land disturbing project areas.

820.7 TREE RETENTION GUIDELINES

Vilas County will meet or exceed tree retention guidelines as identified in the Wisconsin DNR Silvicultural Handbook. On a case-by-case basis the County may retain trees in excess of the guidelines to provide for aesthetic improvements, to provide for old growth retention and to provide for wildlife specific habitat.

820.8 BIOMASS HARVESTING GUIDELINES

Vilas County will follow biomass harvesting guidelines developed by the Wisconsin DNR. Biomass harvesting will be limited on soil types that cannot sustain nutrient cycling without top and slash retention.

825 ANIMAL SPECIES MANAGEMENT

Vilas County Forest provides a wide range of wildlife habitats from open grasslands/barrens to mature forests, from bogs to forested wetlands, from spring ponds to lake shorelines. A primary goal of wildlife management on the Vilas County Forest is to provide a diversity of healthy ecosystems necessary to sustain and enhance native wildlife populations. This forest will be managed primarily to provide habitats for a suite of species rather than focusing on a specific species, with exceptions made for Federal or State Listed Endangered or Threatened Species. In some cases, forest management may be planned to benefit and improve habitat for socially significant animal species including white-tailed deer, ruffed grouse, and wild turkey.

825.1 TECHNICAL PLANNING

Management of wildlife populations on the Vilas County Forest falls under the jurisdiction of the DNR. Planning may be a cooperative effort of the County Forest staff, DNR liaison forester and wildlife manager in formulating management plans and utilizing forest and wildlife management techniques to accomplish desired forest and wildlife management goals.

825.2 GUIDELINES

DNR operational handbooks including the Public Forest Lands Handbook (2460.5),

manual codes and guidance documents are important references and guidelines to utilize in fish and wildlife planning efforts.

825.3 INVENTORY

Habitat needs will be determined by analysis of forest reconnaissance information. Population estimates will be conducted periodically by DNR wildlife, endangered resources personnel, and other trained cooperators. Currently, Department Wildlife staff conduct the following surveys on or adjacent to the Vilas County Forest:

- *Biotic Inventories*
- *Summer deer observations*
- *Brood surveys*
- *Furbearer tracking*
- *Frog and Toad Surveys*
- *Bat Monitoring*
- *Bear bait surveys*
- *Snapshot Wisconsin*

825.4 RESOURCE MANAGEMENT CONSIDERATIONS FOR WILDLIFE

The following areas of focus are identified for achieving plan objects and for benefit of wildlife.

825.4.1 General Management Policies

Forest management practices may be modified to benefit wildlife and diversity. The following will be considered when planning for management activities:

- Even-aged regeneration harvests (clearcuts) should vary in size and shape and include retention considerations.
- A diversity of stand age, size and species.
- Mast-bearing trees and shrubs, cavity trees, and an adequate number and variety of snags.
- Cull trees (future snag or den trees) not interfering with specific high value trees.
- Timber types, habitat conditions and impacts on affected wildlife.

- Access management.
- Best management practices for water quality (BMP's).
-

825.5 IMPORTANCE OF HABITATS

Important habitat types are those cover types known to be of importance to certain native wildlife and whose absence would make that wildlife significantly less abundant. These shortages may be on a local or broader scale. The following habitat types can be considered important:

825.5.1 Non-forested wetlands

The Vilas County Forest contains 2740 acres of non-forested wetland types providing a variety of habitats for common, rare and endangered species. Emergent wetland, sedge meadow, muskeg bog and deep marsh provide habitat for species such as wood turtle, black tern, American bittern, and numerous other species.

825.5.2 Aquatic habitats

The Vilas County Forest includes 716 acres of lakes, rivers, streams, ponds and other aquatic habitats. Open water provides habitat for species such as wood duck, boreal chorus frog, water shrew and many other species reliant on water related resources.

825.5.3 Riparian and other non-managed areas

Undisturbed shoreline and riparian areas present on the forest and provide habitat for species such as red shouldered hawk, green frog, and woodland jumping mouse.

825.5.4 Early successional forests

Management of aspen, white birch, jack pine and other shade intolerant species creates habitat for a large suite of wildlife species that benefit from early successional forests. On the Vilas County Forest there are currently 19141 acres of these forest types present. This is a key habitat used for recreational hunting activities providing conditions favorable for American woodcock, ruffed grouse, white-tailed deer and non-game species such as golden-winged warbler, Kirkland's warbler and black-billed cuckoo.

825.5.5 Conifers

Conifers, whether jack pine, white pine, spruce, fir or other types appear to be an important habitat for a number of wildlife species. The Vilas County Forest currently has 16876 acres of coniferous habitat. Connecticut warbler, red crossbill, northern flying squirrel, and many others utilize conifer types. Jack pine areas can be managed to provide temporary barrens habitat providing habitat for Kirtland's warbler and other barren related species.

825.5.6 Oak management

Oak is an important mast producing food source on the forest, providing acorns for a wide variety of game and non-game species. The Vilas County Forest has 2774 acres of oak habitat. It is considered a critical resource to retain on the landscape for both its timber and wildlife value, providing habitat for species such as scarlet tanager, wood thrush, red headed woodpecker, and black bear.

825.5.7 Uneven/all aged management

Management of uneven aged stands provides for multi-storied canopies, diverse age structure and potentially older forest characters. The Vilas County Forest has 1929 acres being managed under an all aged management system. Species such as Canada warbler, little brown bat, black throated blue warbler and many others benefit from these forest type, In addition, numerous amphibian and reptiles utilize these forest types.

825.5.8 Large forest blocks

Large blocks of County Forest provide habitat for numerous interior species. Gray wolf, black throated blue warbler, Canada warbler and least flycatcher are a few examples of animals that rely on these large blocks. Within this plan, Section 715, 4 limited motorized access areas have been created to provide wildlife habitat on larger forest blocks.

825.5.9 Grasslands, openings, upland brush

Wildlife openings, grass rights-of-way, natural openings, upland brush and other upland open habitats provide for diversity and unique habitats benefitting pollinators, numerous species including upland plover and whip-poor-will. Vilas County Forest currently has 198 acres identified as open grassland or upland brush habitat.

825.6 INTENSIVE WILDLIFE MANAGEMENT PROJECTS

Vilas County has one grouse management unit identified near Snipe Lake, additional wildlife management projects may be completed during the term of this plan.

825.6.1 Wisconsin Wildlife Action Plan / Species of Greatest Conservation Need (SGCN)

In addition to species listed as endangered, threatened or special concern within the NHI database, the Department also maintains a statewide list of species of greatest conservation need.

This list includes species that have low or declining populations and may be in need of conservation action. The list includes birds, fish, mammals, reptiles, amphibians and insects that are:

- Already listed as threatened or endangered
- At risk due to threats
- Rare due to small or declining populations
- Showing declining trends in habitat or populations

The WWAP working list can provide information on how management activities may impact, or in many cases benefit species of greatest conservation need. More information is available on the WWAP website: *https://dnr.wi.gov/topic/wildlifehabitat/actionplan.html* .

825.7 FISH AND WATERS MANAGEMENT

Public waters shall be managed to provide for optimum natural fish production, an opportunity for quality recreation, and a healthy balanced aquatic ecosystem. Emphasis will also be placed on land-use practices that benefit the aquatic community. Management of County Forest lands will attempt to preserve and/or improve fish habitat and water quality.

825.7.1 Technical Planning and Surveys

Management of all waters within the County Forest is the responsibility of the DNR. Technical assistance will be provided by the local fisheries biologist. Studies and management will be conducted in the manner described in DNR Fish Management Handbook 3605.9. Water and Population Surveys fall under the jurisdiction of the Department and will be conducted as needed by fisheries biologists.

825.7.3 Shoreland Zoning

Shoreland zoning will not affect management of forest resources, however development of recreational facilities on the forest shall follow County zoning permits and zoning regulations.

825.7.4 Access and development

Access and development of County Forest waters will be limited to those activities consistent with the above water management policies. See Chapter 740 also for further information on water access.

825.7.5 Important Water Resources

Wisconsin River Valley

Extended setbacks from the Wisconsin River will be maintained as visual buffers for River trail users and to preserve the unique values of that area.

830 EXCEPTIONAL RESOURCES, UNIQUE AREAS

830.1 HCVF FOR FSC AND DUAL CERTIFIED COUNTIES

The DNR established criteria for establishing HCVFs on state lands is found below. For the purpose of this plan, the county recognizes this criterion for identifying HCVFs on county land. This does not preclude the county from identifying other unique areas that do not meet the definition of HCVFs.

HIGH CONSERVATION AREAS

- *Forest areas containing globally, regionally or nationally significant concentrations of biodiversity values including RTE species.*
- *Forest areas containing globally, regionally or nationally significant large landscape level forests, contained within, or containing the management unit, where viable populations of most if not all naturally occurring species exist in natural patterns of distribution and abundance.*
- *Forest areas that are in or contain rare, threatened or endangered ecosystems.*
- *Forest areas that provide basic services of nature in critical situations (e.g., watershed protection).* ***Wisconsin does not have known locations meeting this criterion.***
- *Forest areas fundamental to meeting basic needs of local communities (e.g. subsistence, health of indigenous communities)* ***Wisconsin does not have known locations meeting this criterion.***
- *Forest areas critical to local communities' traditional cultural identity (e.g. areas of cultural, ecological, economic or religious significance identified in cooperation with such local communities).*

  The Vilas County Forest does not have locations identified as High Conservation Value Forest.

830.2 AREAS RECOGNIZED BY STATE OR FEDERAL GOVERNMENT

830.2.1 State Natural Areas

830.2.2 State Scientific Areas

830.2.3 Endangered species habitats (Karner Blue Butterfly, Kirtland's Warbler, etc.)

Habitats for spruce grouse, northern goshawk, Kirtland's Warbler and wood turtle will be preserved by following guidelines as determined by Wisconsin

DNR NHI staff. Other habitats will be considered for management modifications as they become defined.

830.2.4 Rare communities (mesic cedar forest, boreal rich fen, calcareous fen, dry prairie, etc.)

830.2.x Others

830.3 AREAS RECOGNIZED BY COUNTY OR LOCALLY

Vilas County may contain areas that are locally considered exceptional or unique. Some are recognized by other agencies, while others are designated only within this Plan. These resources may include wild rivers, lakes, natural areas, geological features or historical/archeological sites.

830.3.1 Naturally Produced Red and White Pine Stands

Up to 20% of naturally produced red and white pine stands will be retained as extended rotations stands up to 160 years to maintain these naturally produced components on the landscape. When possible these

830.3.2 Wildlife Sites (Hibernacula, Rookeries, Special Habitats)

White cedar and Hemlock stands will be retained by passive management of sites for their unique wildlife values

830.4 CULTURALLY SIGNIFICANT SITES

Identified and discovered culturally significant sites will be protected as determined appropriate by the Wisconsin State Archaeologist. These sites may include:

830.4.1 Burial mounds, cemeteries

830.4.2 Logging Camps, Dams, Forest History

830.4.3 Landmarks that may defined by action of the Forestry, Recreation and Land Committee

835 AESTHETICS

Public perception of forestry has changed over the last planning period and in general it appears that the public is much more accepting of the visual impact of sound forestry. In

response to this, aesthetic management planning is intended to be much more simplified in this Plan.

835.1 AESTHETIC MANAGEMENT

Aesthetic management techniques may be applied in areas of high visibility or high public use. Altered management, visual screens, slash disposal, conversion to other species, no cut zones or other methods may be employed, depending on the circumstances of the specific site.

835.2 AESTHETIC MANAGEMENT ZONES

Aesthetic Management Zones include areas where there may be high levels of public presence because of scenic attraction, or some use of the area that would be enhanced be special timber management practices.

835.2.1 Aesthetic Management Zone

- *Park and recreation areas*
- *Lakes and rivers with significant recreational use*
- *Roads with heavy traffic or scenic drive.*

835.2.2 Aesthetic Management Prescriptions/Options

- *Adjustment timing of timber harvesting*

  Harvesting may be required at times of the year outside of the maximum use of the recreation areas.

- *Slash restrictions/requirements*

  Harvesting may require maximum slash heights or removal of slash from view of recreational sites, roadways or lakes.

- *Staggered Harvests / Visual Screens*

  Layout of harvesting may defer management of some areas to establish visual screens prior to additional harvesting.

- *Forced conversion to longer lived species*

  Where conditions permit, areas within aesthetic management zones will

be managed for natural regeneration and extended rotations of naturally occurring longer lived tree species.

- *Irregular harvest lines, interrupted sight distances*
  Layout of harvesting may have retention areas or deferred management areas to preserve or break views from the recreation area, road, lake or stream.

840 LANDSCAPE MANAGEMENT

The County will make efforts to evaluate surrounding landscapes while managing the County Forest. The County will strive to provide management that compliments the landscapes, but also try to provide for resources or forest types that are lacking or declining within surrounding landscapes.

840.1 CONSERVATION OF BIOLOGICAL DIVERSITY

For the purposes of this plan, biological diversity will be interpreted to reference the variety and abundance of species, their genetic composition, and the communities, ecosystems, and landscapes in which they occur. Forest management activities on the Vilas County Forest enhance biological diversity by managing for a wide variety of habitat types, age structures and by attempting to perpetuate and protect declining forest types.

840.2 HABITAT FRAGMENTATION

For the purposes of this plan, habitat fragmentation is interpreted as conversion of forests to land uses other than forestry. Lands enrolled in the County Forest Law help protect against habitat fragmentation. A continued program of encouraging land acquisition within the forest blocking boundary is intended to decrease the conversion of forest land to other uses.